The Acquisition of English tones by Mandarin EFL Learners: a preliminary study

Weijing Zhou, Yi Zhang, Hong Chen, Xiaoli Ji, and Pengfei Shao

zwjzj513@163.com, zy.0832@163.com, joannachen1028@yahoo.com.cn, jixiaoli2005@126.com, feipengshao@163.com

Phonetics Laboratory, Jiangsu University of Science & Technology (JUST) CHINA
Outline

- Introduction
- Methodology
- Results & discussions
- Summary
- References
1. Introduction

- Basic concepts
- Previous studies
- Focus of the present study
1.1 Basic concepts

- **Intonation**
  - the melody of speech, the changes in the pitch of the voice during the articulation of an utterance.

- **Pitch**
  - the perceptual correlate of (primarily) fundamental frequency, as a result of the vibration of the vocal cords (Cruttenden 2001:255).

- **Tone**
  - the overall behavior of the pitch.
  - Chinese use tone *lexically*, whereas English use it *intonationally*. 
1.1 Basic concepts

- **Intonation**
  - (narrowly described as) the movements or variations in pitch to which we attach familiar labels describing *levels* (e.g., high/low) and *movements* (e.g. fall/rise), etc.

- **Learning intonation** involves learning
  - how the pitch of the voice rises and falls
  - how NS use this pitch variation to convey linguistic / pragmatic meaning.
1.2 Previous studies

- **Research in EPT (L2/EFL):**
  - Intonation plays a very important role in the comprehension and production of the target language (Anderson-Hsieh et al. 1992; Munro & Derwing 1995; Well, 2006).

- **Studies on L2 speech:**
  - The intonation of non-native English poses serious intelligibility problems to NSs of the language (Banjo, 1979; Bansal, 1976).
1.2 Previous studies

- Studies on intonation in NSs

  - Intonation is “among the earliest aspects of language acquired by the child” (Berkovits 1980:272)

  - Intonation contours are also described as “salient and predictable amongst native speakers as grammatical units” (Wennerstorm, 1994:415)

  Intonation system belongs to UG /LAD
  (Innate Hypothesis : Chomsky, 1996)
1.2 Previous studies

- Studies on intonation in NNSs of English

- Notoriously difficult to teach English intonation/tones to NNSs.

- Chun (1998:61) claims it is “seemingly impossible” for adults to learn L2 intonation patterns.

- Tayor (1993:2) believes that intonation is “not teachable, and possibly not learnable either”

- Roach (2000): a very difficult thing to teach; the only way to acquire it is to live among its NSs.

L2 intonation seems unacquirable or unteachable.
1.2 Previous studies

Practitioners & researchers propose:

--- suggestions /recommendations on teaching English intonation (e.g. Celce-Murcia et al. 1996; Cross 2002; Flege 1988).

---yet, they lack authentic data or empirical evidence

---China has the largest population of EFL learners, yet there’s very sparse empirical study exploring this significant issue.

worthwhile conducting an experimental study on the learnability and teachability of English intonation, narrowly English tones, by EFL learners.
1.3 Focus of the present study

Research questions

- To what extent can Mandarin EFL learners acquire the English tones?

- What are the effects of phonetic contexts on Mandarin EFL learners’ acquisition of English tones?

- To what extent can explicit instruction facilitate Mandarin EFL learners’ acquisition of English tones?
2. Methodology

1) Design: a pretest-posttest experimental

2) Subjects: 31 sophomore English majors
   ---learning English for over 10 years
   ---NS of Mandarin, born & grown up in Jiangsu Province
   (to avoid potential problems caused by the influence of diverse mother tongues).
   ---No prior explicit instruction on English intonation.

3) Target tones

4) Treatments & procedures

5) Data collection & analysis
3 Results & discussions

- **RQ1: Overall acquisition rate of English tones**

![Table 2 Acquisition rate of target tones.](Table2.png)

<table>
<thead>
<tr>
<th>Target tones</th>
<th>Number of subjects</th>
<th>Average acquisition rate</th>
<th>Overall acquisition rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL</td>
<td>31</td>
<td>73%</td>
<td>63%</td>
</tr>
<tr>
<td>HF</td>
<td>31</td>
<td>78%</td>
<td></td>
</tr>
<tr>
<td>HR</td>
<td>31</td>
<td>59%</td>
<td></td>
</tr>
<tr>
<td>FR</td>
<td>31</td>
<td>41%</td>
<td></td>
</tr>
</tbody>
</table>

Notes: CL = complex level tone, HF = high fall tone, HR = high rise tone, FR = fall-rise tone

English tones: learnable but partial acquired difficult for Chinese EFL learners to acquire
3 Results & discussions

- RQ2: Effects of phonetic contexts

<table>
<thead>
<tr>
<th>Target tones</th>
<th>Acquisition rate of target tones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NEW</td>
</tr>
<tr>
<td>HF</td>
<td>95%</td>
</tr>
<tr>
<td>HR</td>
<td>95%</td>
</tr>
<tr>
<td>FR</td>
<td>81%</td>
</tr>
<tr>
<td>Mean</td>
<td>90%</td>
</tr>
</tbody>
</table>

Notes: HF=high fall tone  HR=high rise tone  FR=fall-rise tone  NEW=tones in non-English words  1SEW =tones in one-syllable English words  2SEW =tones in two-syllable English words  ES = tones in English sentences

Why?
3 Results & discussions

- **Interview data reveal:**
  1) Fall/Rise in non-English words are much like Chinese lexical tones. 
     ![confidence in its articulation]
  2) Complex Level and Fall-rise, they are fairly distinctive from Chinese Level tone, Fall tone and Rise tone in both **formation & functions.**
     ![confusion + frustration in articulation]

Demonstrating: **negative transfer of L1 intonation** (Odlin, 1989)

- **Conclusions:**
  1) English tones: partial learnable for Chinese EFL learners
  2) English tones in connected speech: a hard nut to crack
3 Results & discussions

What accounted for the effectiveness of the instruction?

Posttest interview data:

1) The instruction is explicit in nature:
   - lectures on the function & formation of English tones
   - Illustration of English tones with Praat/WASP
   - Perception & imitation target tones after the auditory models (CDs) by English phoneticians
   - Assignments for more practice after class (recorded and rated by peers/tutors)
   - Quiz every 3 weeks

2) Contrastive analysis approach
3) Self-evaluation via Praat/WASP
4) Highly-motivated subjects & good cooperation among peers
5. Summary

- English intonation is learnable for Mandarin EFL learners, but the accuracy rate maybe fairly moderate due to negative transfer of L1 intonation.

- The experimental results provide hard evidence for the teachability of English tones to EFL learners, if the instruction is long enough in length, explicit in nature and systematic in the process from perception to production.

- These findings are insightful for EFL intonation pedagogy.


References


Thank you

zwjzj513@163.com
Target tones

- 4 nuclear tones, frequently used in English
  - high fall (HF), high rise (HR), fall-rise (FR), complex levels (CL)
- Embedded in carrier words & sentences (Roach, 2000 & Wells, 2006)

<table>
<thead>
<tr>
<th>Target tones in different contexts</th>
<th>Target tones in carrier words and sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td>HF-HR in NEW</td>
<td>/ma /ma /ma /ma /ma /ma /ma /ma /ma /ma</td>
</tr>
<tr>
<td>CL in NEW</td>
<td>_ma /ma /ma /ma /ma /ma /ma /ma /ma /ma</td>
</tr>
<tr>
<td>HF-HR-FR in 1 SEW</td>
<td>/chair /yes /no</td>
</tr>
<tr>
<td>In 1 SEW</td>
<td>/chair /yes /no</td>
</tr>
<tr>
<td></td>
<td>/chair /yes /no</td>
</tr>
<tr>
<td></td>
<td>/monkey /known</td>
</tr>
<tr>
<td></td>
<td>/monkey /known</td>
</tr>
<tr>
<td></td>
<td>/monkey /known</td>
</tr>
<tr>
<td>HF-HR-FR in 2 SEW</td>
<td>/monkey /known</td>
</tr>
<tr>
<td>In 2 SEW</td>
<td>/monkey /known</td>
</tr>
<tr>
<td></td>
<td>/monkey /known</td>
</tr>
<tr>
<td></td>
<td>/monkey /known</td>
</tr>
<tr>
<td></td>
<td>/monkey /known</td>
</tr>
<tr>
<td></td>
<td>/monkey /known</td>
</tr>
<tr>
<td>HF-HR-FR in ES</td>
<td>You mustn’t /worry.</td>
</tr>
<tr>
<td>In ES</td>
<td>You mustn’t /worry.</td>
</tr>
<tr>
<td></td>
<td>You mustn’t /worry.</td>
</tr>
<tr>
<td></td>
<td>This money is /John’s.</td>
</tr>
<tr>
<td></td>
<td>Are you /ready yet?</td>
</tr>
<tr>
<td></td>
<td>/Almost.</td>
</tr>
<tr>
<td></td>
<td>/Fortunately, I was /wrong.</td>
</tr>
</tbody>
</table>

Note: _ = low level, _ = high level, = High Fall (HF), = High Rise (HR), = Fall-Rise (FR), CL = complex level tone

HF = high fall tone
HR = high rise tone
FR = fall-rise tone
NEW = tones in non-English words
1SEW = tones in one-syllable English words
2SEW = tones in two-syllable English words
ES = tones in English sentences
# Treatments & procedures

<table>
<thead>
<tr>
<th>Pretest</th>
<th>Explicit instruction</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>before the instruction</strong></td>
<td><strong>Lasting 9 weeks, 2- hours instruction per week</strong></td>
<td><strong>After the instruction</strong></td>
</tr>
<tr>
<td>1. A brief introduction to E tones &amp; tone symbols</td>
<td>1. Lectures on E tones</td>
<td>1. Reproduction of the identical target tones in carrier words and sentences (embedded in other oral tasks)</td>
</tr>
<tr>
<td>3. Production of the target tones according to written material with tone symbols</td>
<td>3. Guided imitation of E tones after the auditory models from the CDs attached to the textbooks</td>
<td></td>
</tr>
</tbody>
</table>

Acquisition rate of target tones (learnability)

Effects of instruction (teachability)
Data collection & analysis

- collected in a language lab via Cool Edit Pro V2.1
- analyzed phonetically via Praat (human perception + acoustic representations of the tones).
- rated by the researcher
  1 point = correct articulation;
  0.5 point = partially correct;
  0 point= wrong articulation
- analyzed statistically by Excel and SPSS 14.0.
References


